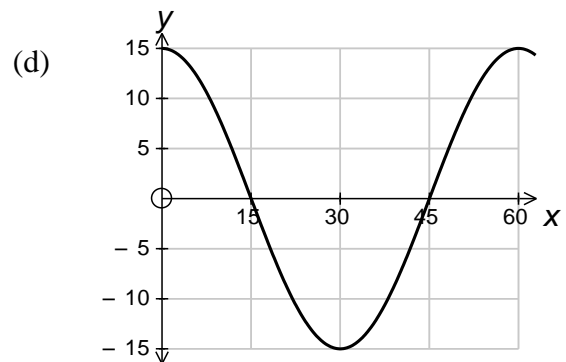
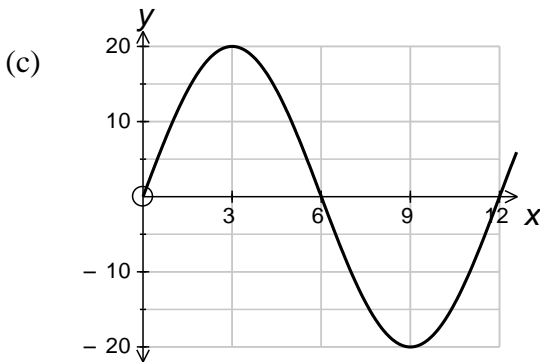
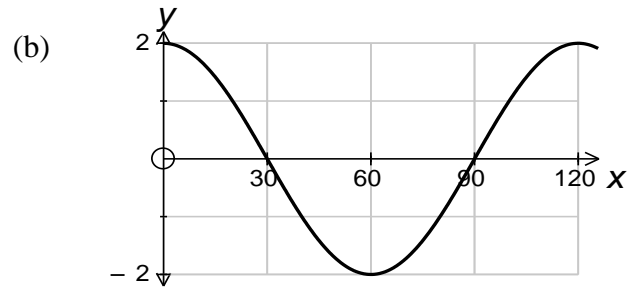
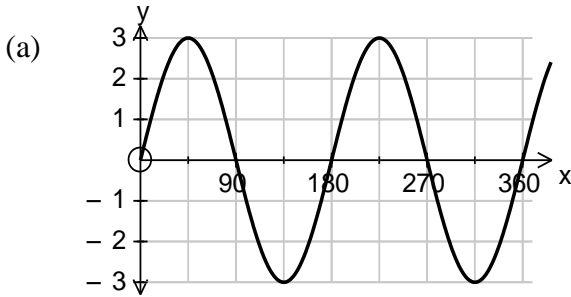


## National 5

### Homework RE16

1. Find the equation of each of these Trig graphs:



2. Draw a sketch of each of these trig graphs. Your sketches should show the coordinates of the turning points and intersections with the axes.

(a)  $y = 3\sin 2x^\circ$ ,  $0 \leq x \leq 180$ .

(b)  $y = 2\sin 3x^\circ$ ,  $0 \leq x \leq 120$ .

3. (a) Express  $\frac{3}{\sqrt{2}}$  with a rational denominator.

(b) Express  $\frac{1}{x} - \frac{1}{x-2}$ ,  $x \neq 0, 2$ , a single fraction.

(c) Express  $\sqrt{32} - \sqrt{8}$  as a surd in its simplest form.

(d)  $Y = 5 + \frac{3}{w}$ . Change the subject to  $w$ .

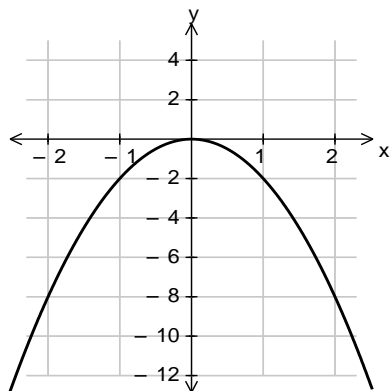
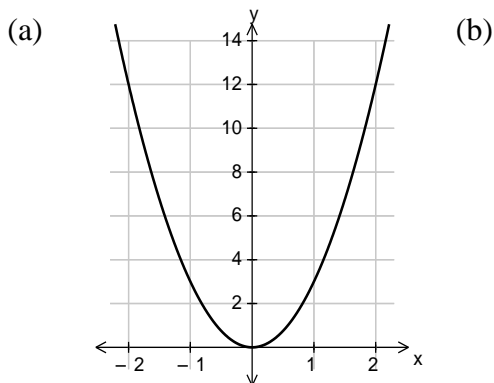
(e) Solve the system of equations

$$5x + 3y = 9$$

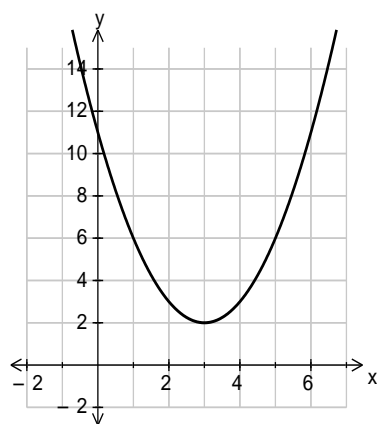
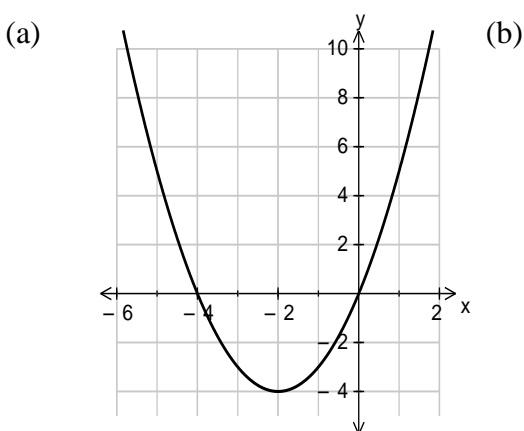
$$7x - 2y = 25$$

4. (a) Solve algebraically the equation  $2x^2 + 5x - 12 = 0$ .  
(b) Multiply and simplify  $(3a + 5b)(5a - 4b)$ .

5. Each of these diagrams shows the graph  $y = ax^2$ . find the value of  $a$ .



6. Each of these diagrams shows the graph of  $y = (x+a)^2 + b$ . Find the values of  $a$  and  $b$ .



7. The cost of hiring a car depends on the number of days the car is hired and the number of litres of petrol used.

- (a) David hired a car for 3 days and used 50 litres of petrol.  
The total cost was £88.50.  
Let  $x$  pounds be the cost per day of hiring a car, and  $y$  pounds be the cost of one litre of petrol.  
Write down an equation in  $x$  and  $y$  which satisfies the above condition.
- (b) Anne hired the same model of car for 4 days and used 60 litres of petrol. The total cost was £113.00.  
Write down a second equation in  $x$  and  $y$  which satisfies this condition.
- (c) Find the cost per day of hiring the car and the cost of one litre of petrol.

8. A cylindrical soft drinks can has height 15 cm and diameter 6.5 cm.  
A new cylindrical can holds the same volume but has a reduced height of 12 cm.  
Find the diameter of the new can, correct to 1 decimal place.

9. A straight line passes through the points  $(4,0)$  and  $(10,3)$ .  
Find the equation of the line in the form  $y = mx + c$ .